

REMARKS

Claims 1-9 and 11-19 are pending in this application. By this Amendment, claims 1, 3, 4, 6, 8, 9 and 11 are amended, claim 10 is canceled, and claims 12-19 are added. Support for the amendments to the claims and the new claims may be found, for example, in the specification at page 11, line 20 to page 12, line 6; page 14, lines 8-21, page 18, line 24 to page 19, line 3; page 19, line 17 to page 20, line 4; page 21, lines 10-19; page 23, lines 10-23; page 24, line 13 to page 25, line 2; page 26, line 20 to page 27, line 10; and in the claims as originally filed. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Personal Interview

The courtesies extended to Applicant's representative by Examiner McDonald at the interview held December 18, 2008 are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below, which constitute Applicant's record of the interview.

II. Rejections Under 35 U.S.C. §103

A. Mitsui in view of Watanabe

1. Claims 1-5 and 7

The Office Action rejects claims 1-5 and 7 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,942,356 to Mitsui et al. ("Mitsui") in view of JP 2001-303243 to Watanabe et al. ("Watanabe"). Applicant respectfully traverses the rejection.

The method of claim 1 requires "forming a thin film on the substrate by sputtering a sputtering target comprising metal and silicon to deposit the thin film onto the substrate by reactive sputtering" (emphasis added). Claim 1 further requires that "the sputtering target has a hardness of 900HV or more in Vickers' hardness." The Office Action acknowledges that

Mitsui does not disclose a sputtering target having a hardness of 900 HV or more in Vickers' hardness. See Office Action at page 4. However, the Office Action asserts that one of ordinary skill in the art would have modified Mitsui to substitute the sputtering target thereof with the sputtering target of Watanabe, which has a Vickers' hardness of 1300 or less, because Watanabe teaches that such a sputtering target prevents defects. *Id.* Applicant disagrees.

Applicant respectfully submits that the Office Action's conclusion of obviousness is based on improper hindsight reasoning, because it is based on knowledge gleaned only from Applicant's disclosure. See MPEP §2145(X.A.). Specifically, without the benefit of Applicant's disclosure, one of ordinary skill in the art would not apply the sputtering target of Watanabe to the method for forming a phase shift mask disclosed by Mitsui because, for example, the sputtering target of Watanabe is not deposited onto a substrate by reactive sputtering. Reactive sputtering refers to sputtering in an atmosphere containing a reactive gas, such as oxygen or nitrogen. Thus, in a reactive atmosphere of oxygen and/or nitrogen, a thin film deposited on a substrate is oxidized and/or nitrided, respectively. See, e.g., specification at page 5 ("The thin film of MoSiO, MoSiON, or MoSiN is deposited by reactive sputtering in a gas atmosphere containing oxygen and/or nitrogen, using a target containing molybdenum and silicon.").

Watanabe is directed to forming a metal silicide thin film that is used as wiring for electronic parts, such as semiconductor devices and liquid crystal display components. See, e.g., paragraph [0084]. Watanabe is not directed to manufacturing mask blanks and masks for photolithography and, thus, does not disclose forming a thin film by reactive sputtering. Rather, Watanabe discloses forming a film on a silicon substrate in an inert Argon atmosphere. See, e.g., paragraphs [0054] and [0065].

Moreover, a person of ordinary skill in the art would not have had a reasonable expectation of success that the same sputtering target used to reduce defects in a thin film

deposited on a silicon substrate in an inert atmosphere would also reduce defects in a light semi-transmitting film deposited on a transparent substrate in a reactive atmosphere because, for example, oxygen is known to cause low discharge stability; increasing defects. See specification at page 11, lines 3-9. Accordingly, a means for reducing defects in an inert atmosphere would not have predictably reduced defects in a reactive atmosphere and, thus, a skilled artisan would not have had a reasonable expectation of success, as required. See MPEP §2143.02.

Furthermore, one of ordinary skill in the art would view Watanabe as teaching that a decrease in the hardness of the sputtering target correlates to a reduction in defects. See, e.g., paragraphs [0056]-[0057] and [0067]-[0068]. This is contrary to the teachings of the instant disclosure of increasing the hardness of the sputtering target to reduce defects and would have lead a skilled artisan away from modifying the method of Mitsui to include the sputtering target of Watanabe as proposed by the Office Action. See, e.g., specification at page 17, lines 7-13.

Thus, Mitsui in view of Watanabe would not have rendered obvious claim 1. Claims 2-5 and 7 depend from claim 1 and, thus, also would not have been rendered obvious by Mitsui in view of Watanabe for at least the same reasons. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

2. Claim 11

The Office Action rejects claim 11 under 35 U.S.C. §103(a) as obvious over Mitsui in view of Watanabe. Applicant respectfully traverses the rejection.

The method of claim 11 requires that, "based on a correlation between a rate of generating defects in the light semi-transmitting film and a hardness of the target where an increase in the degree of hardness of the target correlates to a decrease in the rate of generating defects, the light semi-transmitting film is deposited with the target having a

hardness from 900HV to 1400HV in Vickers' hardness so that the rate of generating the defects is set to be a desired value or less." Mitsui does not teach or suggest "a correlation between a rate of generating defects in the light semi-transmitting film and a hardness of the target where an increase in the degree of hardness of the target correlates to a decrease in the rate of generating defects, the light semi-transmitting film is deposited with the target having a hardness from 900HV to 1400HV in Vickers' hardness so that the rate of generating the defects is set to be a desired value or less" as required by claim 11. For at least the reasons discussed above with respect to claim 1, Watanabe fails to cure the deficiencies of Mitsui.

Accordingly, Mitsui in view of Watanabe would not have rendered obvious claim 11. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Mitsui and Watanabe in further view of Okubo

The Office Action rejects claim 6 under 35 U.S.C. §103(a) as obvious over Mitsui in view of Watanabe, and in further view of JP 07-128840 to Okubo ("Okubo"). Applicant respectfully traverses the rejection.

Claim 6 depends from claim 1 and, therefore, contain all of the features of claim 1. The deficiencies of Mitsui and Watanabe with respect to claim 1 are discussed above. Okubo, which is applied by the Office Action for the additional feature recited in claim 6, does not cure the deficiencies of Mitsui and Watanabe with respect to claim 1.

Thus, the applied references, either separately or combined, would not have rendered obvious claim 6. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejection Under 35 U.S.C. §102

The Office Action rejects claims 8-10 under 35 U.S.C. §102(b) as anticipated by Watanabe. By this Amendment, claim 10 is canceled, rendering its rejection moot. As to the remaining claims, Applicant respectfully traverses the rejection.

Watanabe fails to disclose a sputtering target in which "silicon is from more than 80 mol% to 95 mol% of the sputtering target." Rather, Watanabe discloses a silicon content from 66 mol% to 80 mol% according to the formula MSi_x in which x is from 2 to 4. See Abstract.

Support for a sputtering target in which "silicon is from more than 80 mol% to 95 mol% of the sputtering target" may be found, for example, in the specification at page 19, lines 1-3. Specifically, the specification at page 19, lines 1-3 discloses that "the amount of silicon to be contained in the target is preferably set to be 70 to 95 mol%, and more preferably [is] 78 to 92 mol%." The lower limit of "more than 80 mol%" required by claim 8 is within the ranges explicitly disclosed by the specification.

Applicant respectfully submits that to provide written description for a claim, the specification as originally filed must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, the inventors were in possession of the invention as claimed. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991); MPEP §2163(I). This possession may be shown by any number of ways and the applicant need not describe every claim feature exactly because there is no *in haec verba* requirement. See MPEP §2163(I)(b). Rather, to satisfy the written description requirement, all that is needed is "reasonable clarity." See MPEP §2163.02. Also, an adequate description may be made in any way through express, implicit, or even inherent disclosures in the application, including words, structures, figures, diagrams, and/or formulae. See MPEP §§2163(I), 2163.02. Accordingly, Applicant respectfully submits that the lower limit of "more than 80 mol%" is at least implicitly disclosed by the specification and, therefore, the recitation of this feature in claim 8 does not add new matter.

Thus, Watanabe does not anticipate claim 8. Claim 9 depends from claim 8 and, thus, also is not anticipated by Watanabe for at least the same reasons. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

IV. New Claims

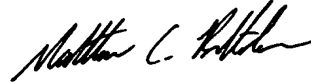
By this Amendment, new claims 12-19 are presented. New claims 12-19 depend from claim 1 and, thus, distinguish over the applied references for at least the reasons discussed above with respect to claim 1. Claims 12-14 are supported by the specification for at least the reasons discussed above with respect to claim 8. Prompt examination and allowance of new claims 12-19 are respectfully requested.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Matthew C. Barthalow
Registration No. 60,323

JAO:MCB

Attachment:
Petition for Extension of Time

Date: January 8, 2009

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

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